

MORALE BOOSTER ONE

December 11, 3

Nearly a month and one-half has gone by since the writing of Urgent Bulletin III, an interval marked by great surprise and progress for the future. The surprise is documented in Urgent Bulletin IV and will not concern us here. The progress is quite exciting and will serve as the basis for my opening remarks. Although response to UBIII and CPIII has been somewhat muted and cautious, the vision of transcendent experience with/in Great Space continues unabated, nay, increases. It is not an unfounded vision for each day brings new evidence to bear on the question and it is usually supportive. Space is the place, as Huntress of Pure Moon would say, because it is the only place there is. Let's proceed!

Notes on the Moving Workshop

The Moving Workshop's first formal session (others were planned, but informal sessions took their place) ensued as planned on the twenty-second day of November with Sigrid Nelson, Shelly Nelson, Ginette Stamnitz, Theodore White, Linda Strickler, Graham Maughan, Jes Hinrichs, and Will Hinrichs in attendance. After availing themselves of an exquisite repast, the participants in the workshop devoted the evening to creative thought on the bumper sticker and its design. The workshop was successful beyond all expectations in this regard, as far more designs than could be employed in one composition were created. Indeed, this aspect became emphasized as additional (informal) meetings occurred. Willie Gibson, Terry Wepsic, Donald Stern, and Roseann Lamantia provided additional ideas in the informal sessions, and even John Alaimo had a spacy dream (he saw the moon so close we could just hop right over!). Although all these ideas cannot be used at once, that is not to say that they will go to waste. As usual, we have Plans.

But what those plans are is a subject for a future Morale Booster as many indeterminate variables need clarification before a formal presentation would be meaningful. Furthermore, the bumper sticker demands our attention now, its success is the current primary concern. Thus, attention needs to be shifted from purely speculative enterprises to the immediate concerns of the sticker. The project rapidly nears completion as Huntress of Pure Moon brought the finished original (a composite of ideas of Ginette Stamnitz, Linda Strickler, and Roseann Lamantia integrated by Graham Maughan and Linda Strickler) to the Prime Mover and the Magistrate of History and Mystery, December 10, for their inspection. And tumultuous acceptance! The only remaining stages are the preliminary production (which involves submitting the original to San Diego Silk Screen and passing judgment on their sample) and the full production (with initial distribution). It is believed that this process will be completed by January 6, 3 although there are irrational hopes that it might be completed in time for the Party Meeting Rally which Cell 2 is holding December 29, 3. The present determined prices for the bumper stickers are: (a) one for forty-seven cents; (b) two and a half for one dollar; (c) one hundred or more for ten dollars (a price change effective January 7, 3 will be instituted in this category; the new price from that date will be one hundred or more for eleven dollars). Already orders are coming in!

Voices From The Outside World

As encouraging as our efforts so far with the publicity campaign, they are not the only source of optimism for thinking that success of the campaign is to

be expected if we continue along the paths of action established thus far. The public is ripe for space (whatever that means!) and each day the news provides evidence for that view. Some news! sir, please some news!

"A new ham radio satellite developed by amateur operators in the United States, Canada, Australia and Germany is circling the earth 876 miles high for both educational use and emergency communications. Called OSCAR 7, an acronym for Orbiting Satellite Carrying Amateur Radio, the spacecraft was lofted Nov. 15, at no cost to the hams, as a piggyback passenger aboard a National Aeronautics and Space Administration...Delta rocket launched from Vandenberg Air Force Base. Primary payload on the mission was the fourth in a series of advanced meteorological satellites, called ITOS-G. The 65-pound amateur communications orbiter, culmination of a four-year project by the worldwide Radio Amateur Satellite Corp....was developed in the basements and garages of ham operators for a cash investment of about \$60,000. A commercial satellite performing the same functions would cost nearly \$2 million, according to Jan A. King, project manager at NASA's Goddard Space Flight Center in Greenbelt, M.D. Dr. Norman L. Chalfin, vice president of the Amateur Radio Club at the Jet Propulsion Laboratory, said funding for the project came from donations by individuals and companies. OSCAR 7, he explained, is the latest and most complex of a series of communications spacecraft built by amateur operators, including OSCAR 6, which has been in orbit for almost two years, having outlived the ITOS satellite that was its host at launch. An important function of the new orbiter is its planned use by schools throughout the country to acquaint youngsters with space science in a cooperative project with NASA's Educational Programs Office. With inexpensive ground terminals, Dr. Chalfin said, students will be able to receive satellite signals firsthand in their classrooms to monitor transmissions as distant as 5,000 miles. The American Radio Relay League, 225 Main St., Newington, Conn., he added, is offering teachers free curriculum material on OSCAR's use in demonstrating the basic concepts of orbital mechanics, radio wave propagation and the physics of the space environment. The 105,000 member league also will put teachers in touch with local volunteers to set up their personal radio equipment for classroom demonstrations. In addition to its educational use, and the capability it offers for two way communications between hams, OSCAR 7 is designed for emergency communications to help fulfill the traditional role of amateur radio operators in disaster assistance throughout the world." Los Angeles Times, Nov. 22, '74, page 4, part II, columns 1-4.

"Spectacular photographs of the sun taken by the Skylab astronauts have provided a better understanding of thermonuclear fusion, which could speed development of a limitless new energy source for earth. 'By lifting a battery of telescopes above the earth's obscuring atmosphere and providing the filters and sensors required to peer directly at the explosive surface of the sun, Skylab has given the first real insight into its activity that governs the function of the solar system,' a team of scientists reported here Thursday at a conference on Skylab results. They said the photographs and other data gathered by the three Skylab astronaut teams last year and early this year have increased knowledge of the sun by a hundredfold. Analysis of the information, they said, could cut five or six years off development of a breeder reactor controlled by thermonuclear fusion. Experts estimate that normal research, now under way, will require another 15 to 30 years. A fusion device would eliminate the need for an atomic fission triggering mechanism and would use a cheap, plentiful element, such as deuterium, for fuel. A breeder reactor actually would produce more fuel than it uses. Thermonuclear fusion is the source of the sun's tremendous energy and Skylab data, while still preliminary, are beginning to shed light on how it is controlled and transferred on and beneath the solar surface. The Skylab pictures have shown the sun as a ball of incandescant

gas 850,000 miles in diameter enclosing a core of thermonuclear explosions. The surface is a bubbly mass of fiery thunderstorms and, when trapped plasma bursts through the magnetic fields, it leaps two million to three million miles in space, creating the solar wind and radiation that disrupts weather and causes magnetic storms on earth. The scientists said the Skylab data also would be used in a government study to determine means of converting sunlight directly into energy for cities. Among suggestions under study are solar farms employing large solar cell panels to catch the sun's rays for conversion, and orbiting satellites that would do the same thing and transmit the energy to earth by microwaves. The scientists urged further study of the sun in the future as more sophisticated spaceborne instruments become available. These would be carried on unmanned satellites and aboard the manned space shuttle scheduled for operational use beginning in 1980. Los Angeles Times, Nov. 1, '74, Page 16, Part I., Columns 1-5.

"Meet Ma and Pa Pioneer as they alight from the rocketship Mayflower to colonize a man made mini planet hovering near Earth. After building home, the out of this world settlers can start planting separate agricultural satellites and within years be self sustaining. This is the answer to the world's energy and population problems as proposed by Princeton University Prof. Gerard K. O'Neill, who described his plans Wednesday at the National Aeronautics and Space Administration's Ames Research Center here. O'Neill has been working for five years on the outer space colonization project and he believes that with \$30 billion an experimental colony of 10,000 people could be started. O'Neill said the mini planets would be enormous cylinders some four miles in diameter and weighing 500,000 tons. They would be powered by solar energy and air conditioned by natural forces. 'If we are to avoid major crises of energy and population, we must exploit space now,' O'Neill said. He said the orbs would be built with titanium and aluminum from the moon and could be constructed with a work force of 2,000 persons in an orbital work station in six years. The pioneer settlers could learn to regulate the number of hours in their days by controlling the orbiting homestead. O'Neill said agricultural satellites would be sent around the sphere with crops for every month of the year." San Diego Union, Sept. 29, '74, Page A-15.

"...As much as possible is done to offset the heat. Floorboards must be standard, but asbestos floor mats are used to fend off engine heat. Nearly all drivers carry a one-gallon water thermos, attached securely behind the seat. They suck the water from a tube. Petty goes one step farther. He wears a skull cap, known as cool head, connected to a supply of ice water. Developed by an aerospace engineering firm for space flight, it has been tested by Petty for two years. It circulates ice water around his head and neck. About halfway through the Times 500 the ice will have melted and Petty will exchange ice chests during a pit stop..." Los Angeles Times, Nov. 17, '74, Sports Section (emphasis added).

"Scientists Monday gave President Ford a speck of space-grown crystal that will make it feasible to reduce computers to a tenth of their present size. Mr. Ford accepted the indium-antimonide crystal from Howard Johnson, chairman of the Board of Massachusetts Institute of Technology, NASA Administrator James C. Fletcher and NASA Deputy Administrator George M. Low. Fletcher said the crystal, grown aboard Skylab space station in January, could be the start of a new \$1 to \$2 billion dollar industry. 'This is one of the few things that makes sense about the costs of spaceflights,' Johnson said. 'It is a rare thing which has been done.' Johnson, whose MIT scientists led by Prof. Harry C. Gatos designed the experiment, said the crystal was the most pure and of the longest life yet produced by man. When used to carry current inside a computer, he said, the crystal allows, for example, a hand computer to be reduced to one-tenth of its present size--about the size of a large postage stamp. Johnson said it could be used also to reduce drastically the sizes of television sets, cameras and other electronic devices. The crystal

was grown in Skylab furnaces by astronauts Gerald P. Carr, Edward G. Gibson and William R. Pogue. But Johnson said that it might be possible to grow them in unmanned space vehicles. Scientists have long wanted to produce high quality crystals, John said, and the absence of gravity in the spacecraft made this possible. Johnson said he did not know if the Russians had tried to produce crystals in space. 'If they haven't, they're missing a bet,' he said. Mr. Ford told the scientists he would display the crystal in his office." Los Angeles Times, Nov. 5, '74. Page 1, Section I.

"Miniature gauges capable of giving doctors important information about heart function after a heart attack have been developed by Cedars-Sinai Medical Center scientists working with Jet Propulsion Laboratory engineers. The gauges, a space program spinoff, permit measurement of forces and motions generated by tiny segments of the heart which may have been damaged by the heart attack. Dr. Samuel Meerbaum, a Cedars-Sinai scientist, Monday told an American Heart Assn. meeting in Dallas about recent animal studies using the gauges. He said the new gauges are being considered for use during open heart surgery to delineate areas of the heart which are contracting inadequately or have other mechanical abnormalities. The gauges incorporate semiconductor elements first developed to measure forces and stresses within rocket propellants and structures. Meerbaum pointed out that effective treatment of coronary occlusion (heart attack) requires earliest possible detection and assessment of heart complications. One need, he said, has been to define the mechanical functions of regions of the heart where blood flow has been sharply reduced by the occlusion. Previous measurement techniques involved either indirect assessment or the use of large experimental gauges which could not readily discern specific regional mechanical movements. The new gauge is about one-quarter inch long. It has very thin needles on one side which allow the device to be attached to the surface of the heart during open heart surgery. The information picked up by the semiconductor elements is translated visually into a tracing which appears on an oscilloscope. Doctors can tell by the shape of the tracing whether contraction is normal and also deduce other characteristics. One of the most important uses, the research said, will be to test on animals the effects of various kinds of drugs to see whether they help improve contraction. Other members of the team are Jules Osher, Dr. Tzu-Wang Lang, Gilbert Lewis, Cyril Feldstein, Edward Duran and Dr. Eliot Corday." Los Angeles Times, Nov. 19, '74, Page 1, Section III. (Emphasis added)

"The Soviet Union Monday launched another earth satellite, Cosmos 693, to continue studies of outer space, Tass press agency said." Los Angeles Times, Nov. 5, '74.

"The first phase of space-exploration is over and the pioneering phase is beginning, said the first civilian astronaut to walk on the moon. On the horizon is the civilization of space, geologist Harrison H. Schmitt told a conference in Huntsville, Ala. He foresaw the day when students of all ages and nations will attend orbiting classrooms, studying everything from nuclear physics to poetry and prose. Schmitt, who flew on Apollo 17 two years ago, said the Apollo and Skylab projects had proved conclusively that man could live in space, opening the way for routine flights to earth's new frontier in the space shuttle, starting in 1979.

'Compressed into the last decade of space activity, history has seen the equivalent of two centuries of exploration of the Great American West,' he said." Los Angeles Times, Oct. 31, '74, Page 2, Section I. (Emphasis in original)

"Right on schedule, the Pioneer 11 spacecraft plunged into the intense radiation belts of Jupiter, almost half a billion miles from earth, swooped beneath the planet's south pole, crossed the equator and the north pole and then was outward bound for its scheduled 1979 encounter with Satter--a curved-trajectory voyage

that will carry it yet another 1.5 billion miles. Though the close brush with Jupiter lasted only 52 hours, the 570-pound spacecraft came within 26,600 miles of the planet's cloud top (Pioneer 10 made its passage last year at a distance of 81,000 miles). The equipment on board took the first pictures of the Jovian polar regions, and the clearest close-up yet of the Great Red Spot. It also provided scientists with information they need to design a spacecraft that eventually may attempt a probe closer to the planet's surface. But Pioneer's rendezvous with Jupiter was not all easy flying. Shortly after the spacecraft entered the planet's radiation belts, one of the experimental devices that was supposed to analyze hot gases went haywire and had to be shut off by signals from earth. Next, an infra-red detector that was scanning the polar regions of the planet executed 118 un-commanded operations. About 40 per cent of the data scientist had hoped for from the north polar region was lost. But ten other experimental devices survived the fly-by in fine condition, and for anxious astronomers back on earth, the latest look at Jupiter proved far more spectacular than most had expected. Two objects of scrutiny were the deep-indigo atmospheres at the north and south poles. These turn out to be pocked with circular patches of red that 'breathe' like a boiling porridge. Dr. Tom Gehrels, of the University of Arizona, thinks the bubbly masses are 'convection cells'--vents for gases rising from about 30 miles below the Jovian cloud tops. This splotched appearance is in marked contrast to the planet's smoothly banded equatorial region. Pioneer 11's mission to Jupiter also permitted the spacecraft's cameras to look directly into the eye of the planet's 20,000-mile-wide Great Red Spot. Since it was first discovered by British astronomer Robert Hooke in 1664, the spot has been the subject of much scientific curiosity and speculation. Now scientists say the spot is really a centuries-old storm still in process. The turbulence appears to be swirling masses of gas whose agitation produces its deep-red color at the center and accounts for the light rings of beige and white at the calmer periphery. What initially caused the storm and has sustained its fierce winds, however, is still a mystery. Pioneer 11 also gave scientists a chance to study the changes that have occurred on the Jovian surface since Pioneer 10's fly-by last year. Most prominent are a set of two plumes, one streaming from east to west in the northern hemisphere and the other on the opposite side of the planet. These drift like thick smoke blowing from a chimney in a strong wind. The primary driving force of the westerly circulation is thought to be heat flowing from Jupiter's interior, rather than the gentle warming from the sun that affects weather patterns on earth. Scientists at the National Oceanic and Atmospheric Administration in Princeton, N.Y., will use the currents to come up with a model to study future weather-circulation patterns on Jupiter. Pioneer 11 also produced the best pictures ever of Callisto, the second largest of the thirteen Jovian moons; they reveal a smear of white that scientists think is a polar icecap similar to the one found on Mars. Callisto and Jupiter's three other major moons (Io, Ganymede, and Europa) drag through the planet's dense sea of charged particles 'like spades moving through a bucket of molasses,' says physicist James Van Allen. Thus, says Van Allen, each moon carves out a 'distinctive signature' by the way it sweeps up particles. Pioneer 11's south-north trajectory around Jupiter afforded scientists a chance to use the planet's strong gravitational field to give the craft a sharp corkscrew kick toward Saturn. If Pioneer 11 survives the perilous journey between Saturn and its rock-studded rings, the next target will be Titan--the major satellite of Saturn and, according the scientists, the most likely candidate in the solar system to harbor life." Newsweek, Dec. 16, '74, Page 106-107, Science section (Emphasis added).

"Man sent out a powerful radio signal Saturday in an attempt to communicate with other civilizations in the Universe. The signal was beamed from the world's most powerful radio telescope for less than three minutes Saturday afternoon,

sounding to the uneducated ear like a two-toned version of Morse code. Its double frequency sound was designed by scientists to tell another civilization what sort of people we are, where we live and how we got our start. 'This coded signal starts with a simple lesson on how to count, and then very carefully describes the chemistry of life on earth,' said Frank Drake, director of the National Center of Astronomy and Ionosphere, which operates the Arecibo Observatory for Cornell University and the National Science Foundation. 'It tells how complex we are, what our genetic material is. It also tells how advanced we are, by telling in code bits the structure, growth and brain of a human being. The signal was by far the most powerful ever beamed from earth, the equivalent in its fashion of 25 times all the electricity ever generated by power plants on earth. It is so bright that it is the equivalent of one million suns deep in space. By the time the last words of the signal were being transmitted, its first words had reached the orbit of Mars. Traveling at the speed of light...the signal had passed Saturn and had sped by Pluto on its way out of the solar system. Despite its great speed, the signal will not reach its destination for 24,000 years. It has been aimed at a globular cluster of 300,000 stars called Messier 13, at the edge of the Milky Way Galaxy. 'None of us should count on getting any reply to this message by this weekend,' Drake said. 'We'll never know if this thing worked, at least none of us here.' The reason Messier 13 was chosen as the destination for the attempt is that its star cluster matches in size the beam of the telescope at the distance of 24,000 light years. In effect, all the power of the signal is being directed at the 300,000 stars in the cluster. None of it is wasted and no stars in the cluster are bypassed. Nobody knows, of course, what the chances are that the signal will be intercepted and heard by a distant civilization 24,000 years from now, but Cornell University's Carl Sagan estimates that there are as many as one million civilizations scattered through the universe. 'In a star cluster with 300,000 stars in it,' said Sagan, one of the foremost authorities on life in other worlds, 'I would say there is about a 1 in 2 chance of there being a civilization in Messier 13,' " Los Angeles Times, Nov. 17, '74, Page 5, Section I-A.

"I was in Spokane not long ago, making one of my infrequent, and inept, speeches. I reminded my audience that, if 1974 standards had been applied 200 years ago, there would have never been a Spokane, for assuredly the colonists along the Eastern Seaboard would not have seen fit to press westward beyond the Appalachians until every last vestige of poverty, discrimination and despair had been erased from their squalid settlements. Somehow, that thought was not well received in Spokane, perhaps because those who know they have benefitted from exploration rarely criticize it. Nowhere is this distinction more clearly drawn than in the American space program. Those very few of us who have been privileged to see our tiny blue and white gumdrop from a great distance are forever enriched by the recollection of that view. But the other 3 billion chaff and fret: They watched a moonwalk once, as they have the Superbowl, but now they have done that, and they want to get on with matters of greater relevance to their daily lives. Our space program reflects that fact. Today NASA finds itself in a period of earth-oriented consolidation, focusing on its powerful ability to orbit the earth once each 90 minutes with a variety of sensors. As the data from these satellites pour in, we are beginning for the first time to take the full measure of our planet, in terms of assessing the extent of the ravages caused by several millenia of human carelessness. Such a survey is the first step in the repair process. I confess I am ambivalent about this now focus--this going out, not for going out's sake, but for looking back at our point of origin. Did those who settled Spokane expect to help New York (or York) in the process? I doubt it, even though the rich harvest of their labor in the Northwest Territory certainly was felt in other parts of the

globe. No, I think exploration should--and can--stand on its own merits. Man has always been an explorer; he has always gone where he has been able to go. It's simply part of the inquisitiveness that distinguishes him from lower life forms. It's fine for him to peer through microscope and telescope but, beyond that, there comes a time when one must go, and see, and touch, and report back. In the case of our moon, I think it is too early to tell whether we have merely raked a sterile rock pile or whether we have brought back a scientific Rosetta Stone. Alas, those who financed the trip seem to know, and have called a halt to exploration--at least in the sense of sending man himself out with his machines to the far reaches of the solar system. This halt is difficult to analyze. Progress always seems to come in spurts--nothing is even, not the growth of a child or an idea. Perhaps a quiet interlude of introspection, of consolidation, is good for man the explorer. All I know is that in Spokane, savoring the impatience and the vitality of this young nation, it seemed time to get on with it once again." Michael Collins in the Los Angeles Times, Nov. 7, '74, Page 7, Section II (Emphasis added).

An exhortation to the troops

December 15, 3: Let's picture ourselves at the barricades--the barricades of Possibility. Though I address you now as your leader, let it be understood that in the uprising in which we are involved leadership is an ephemeral thing, the product of product of free will exercised forcefully. Someone steps in; someone else steps out. I adopt this posture for its flamboyant aspects which are compensation for the enormity of the voids between us. Onward! This must always be our focus. Onward! As time marches, let us march with it, raising our voices loudly in our pronouncements and designs on its passage. Confidence is our byword, our surname, our stigmatum, our most telling blow and, if we realign ourselves continually with this expression in mind, the heights which we will attain will boggle our imaginations. Look up! There is no vertigo! Push and prod your minds to greater wonder; this measly existence which we call Terran should amuse us only slightly. What a paltry alternative! No, my friends, my comrades, my conspirators--in-arm, there is but one program which can satisfy our latent desires-powers: the moon, the stars, and beyond!

It is perhaps unclear to you that I speak in the most personal manner with these communications. Thus, I state the obvious and tell you that these messages come to you not as a third class mail circular but as the registered letter of my musings. Consequently, some reciprocity is in order. There is nothing shameful about the practice so we needn't hesitate to act for fear of the moral implications. Look alive! There is nothing shameful about that either!

The bumper sticker enters the preliminary production stage; we wait for our first sample. The orders continue to come in and it is certain that there will be many exultant customers. With the approaching completion of the initial action in our publicity campaign for space, attention must focus on the next maneuver. This will entail writing polemics for our position which will then be distributed to public officials, in particular, the new Congress. People will be needed to sign letters, as well as to write them. There is much work to be done but it is not arduous or demeaning. We work for space and, thus, in actuality, play for it simultaneously. As you each respond to this morale booster, specifics of action and involvement will be discussed. Put on your thinking caps; zap yourselves with thought.

To conclude, with repetition. Establish communications here, there, and everywhere. Do not let the speed of light intimidate you. What embellishments you can all contribute! Take up the galactic banner, whirl it in front to clear

the way! As the earth turns, new vistas appear on the galactic horizon. Drench your eyes in them! To aid you, I institute a reading list. The first selection is Nova by Samuel Delany. The second is The Princess of Mars by Edgar Rice Burroughs. Challenge them! They will challenge you, just as the stars and planets challenge you, to transcend yourself for a timeless moment. The stars! Are ours! Space! Is the place!

Graham the PM